

NEW INFORMATION ON THE TOARCIAN AMMONITE GENUS *PSEUDOLILLIA* MAUBEUGE 1949

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ABSTRACT. The genus *Pseudolillia* Maubeuge is redescribed on the basis of new material, and *Ammonites emilianus* Reynès is assigned to it. The genus is characterized by straight ribs which die out on the later whorls, and by decrease in the relative diameter of the umbilicus with increasing size of the shell. It is provisionally placed in the Subfamily Grammoceratinae.

THE discovery in Spain of some ammonites belonging to the genus *Pseudolillia*, previously known only by the holotype of the type species, has provided an opportunity to amplify the original description of the genus. Consideration of the inner whorls, now described for the first time, enables the species long ago named *Ammonites emilianus* by Reynès to be placed in *Pseudolillia*.

The new material was collected by Mr. O. Renz, on behalf of Bataafse Internationale Petroleum Maatschappij, N.V., who have given permission for this account to be published. They have also generously presented the material described to the Geology Museum of the University of Bristol. I am indebted to Dr. M. K. Howarth for drawing my attention to the genus *Pseudolillia*, which I had overlooked, and to Dr. J. Sornay for sending me a plaster cast of the holotype of *P. murvillensis*.

SYSTEMATIC ACCOUNT

Family HILDOCERATIDAE Hyatt 1867
Subfamily GRAMMOCERATINAE Buckman 1904
Genus *PSEUDOLILLIA* Maubeuge 1949

Type species. *Pseudolillia murvillensis* Maubeuge.

Diagnosis. Genus of Hildoceratidae with ribs on the inner whorls which are straight on the whorl side, and curve forwards towards the periphery. The keel may be flanked by grooves. With increasing size the shell becomes smooth, the ventral grooves disappear and the relative size of the umbilicus decreases. These features distinguish the genus from others in the family. The whorl-section is parallel-sided in the early stages, becoming convergent or trigonal later. The body-chamber is unknown.

Pseudolillia murvillensis Maubeuge

Plate 12; text-figs. 1A, B; 2A, B

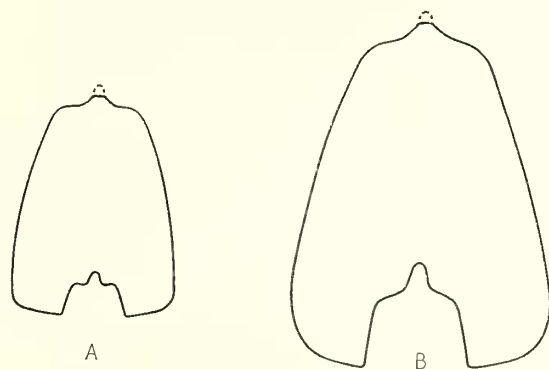
1949 *Pseudolillia murvillensis* Maubeuge, p. 150, pl. 1, pl. 2 (upper figure).

Type. The holotype, from the Mine de Murville (Meurthe-et-Moselle), France, is in the Muséum d'Histoire Naturelle, Paris.

[Palaeontology, Vol. 5, Part 1, 1962, pp. 86-92, pl. 12.]

An example from Salas de los Infantes, 48 km. south-east of Burgos, Spain (University of Bristol Geology Museum no. 15230), shows the inner whorls and supplements the original description. On the basis of this specimen and the holotype the species may be described as follows:

The early whorls are compressed and ornamented with close, straight ribbing. The whorl-section at this stage is nearly parallel-sided. By a diameter of 5 or 6 cm. the whorl-section has become more nearly trigonal, and a little later the umbilical wall becomes steep and sharply demarcated from the whorl-side. From a size of about 10 cm. the inner half of the whorl-side is smooth, only the peripheral ends of the ribs remaining. These are fairly strong on the holotype, faint on the Spanish example. The present



TEXT-FIG. 1. Whorl sections of the example of *Pseudolillia nurvillensis* figured in Plate 12, figs. 1, 2. A, at a diameter of 7.0 cm., B, at a diameter of 11.5 cm. Natural size.

writer disagrees with Maubeuge's statement that the ribs are joined in pairs at their inner ends, for a careful examination in oblique light has failed to reveal such a feature. The inner ends of the ribs merge into the surface of the shell, and if an isolated pair of ribs be examined, this could perhaps be mistaken for junction.

The holotype, as Maubeuge pointed out, retains a short section of a high, compressed keel, and this feature is seen in transverse section on the inner whorls of the Spanish example. The keel was septate and the impression of the septum may be seen on the holotype, which is an internal mould. The keel is flanked by well-marked shoulders.

The septal suture is moderately reduced, that is, the minor indentations are small and blunt. The first lateral saddle has a well-marked median incision. The second lateral saddle has a smaller incision on the Spanish example; it is not clearly visible on the holotype. The first lateral lobe is strongly asymmetrical, and in the Spanish example has a prominent little saddle on the ventral side; this element is not well differentiated on the holotype. The saddles are much longer on the holotype than on the Spanish example.

The holotype is still septate at its maximum diameter of 15.1 cm., and bears the trace of the umbilical suture of another full whorl. The maximum size can hardly have been less than 30 cm. The umbilicus of the inner whorls of the Spanish example is about 40 per cent. of the diameter, while at a diameter of 13.0 cm. it is only 32 per cent. The

whorl thickness at the same size is 28 per cent. of the diameter. The holotype at the same size (13.0 cm.) has similar proportions; it cannot be measured at smaller sizes.

Notes on other examples. An ammonite collected by O. Renz from el Cortijo, north of Granada, Spain, University of Bristol Geology Museum no. 15232, agrees fairly well with the inner whorls of no. 15230. Close comparison is impossible because no. 15232 is partly weathered, and probably slightly crushed. It is wholly septate and has a diameter of 7.7 cm., and an umbilicus 35 per cent. of the diameter. A diagram reconstructed from drawings of it is shown in text-fig. 2A, B.

Monsieur R. du Dresnay has kindly sent me for examination a whorl fragment collected by him in beds with *Paroniceras* near Habbou el Kehal, between Bou Arfa and Figuig, in the eastern part of the High Atlas, Morocco. It belongs to the septate part of an ammonite, between 3 and 4 cm. in diameter, and agrees with *P. murvillensis*, although it is inadequate for identification beyond doubt.

Stratigraphical horizon. The holotype was found associated with *Pseudogrammoceras subfallaciosum* S. S. Buckman, below beds with *Phlyseogrammoceras dispansum* (Lycett) (Maubeuge 1949, p. 150). This record clearly places it in the Struckmanni Subzone of the Thouarsense Zone in the new zonal scheme for the Upper Toarcian recently proposed (Dean, Donovan, and Howarth 1961, p. 487).

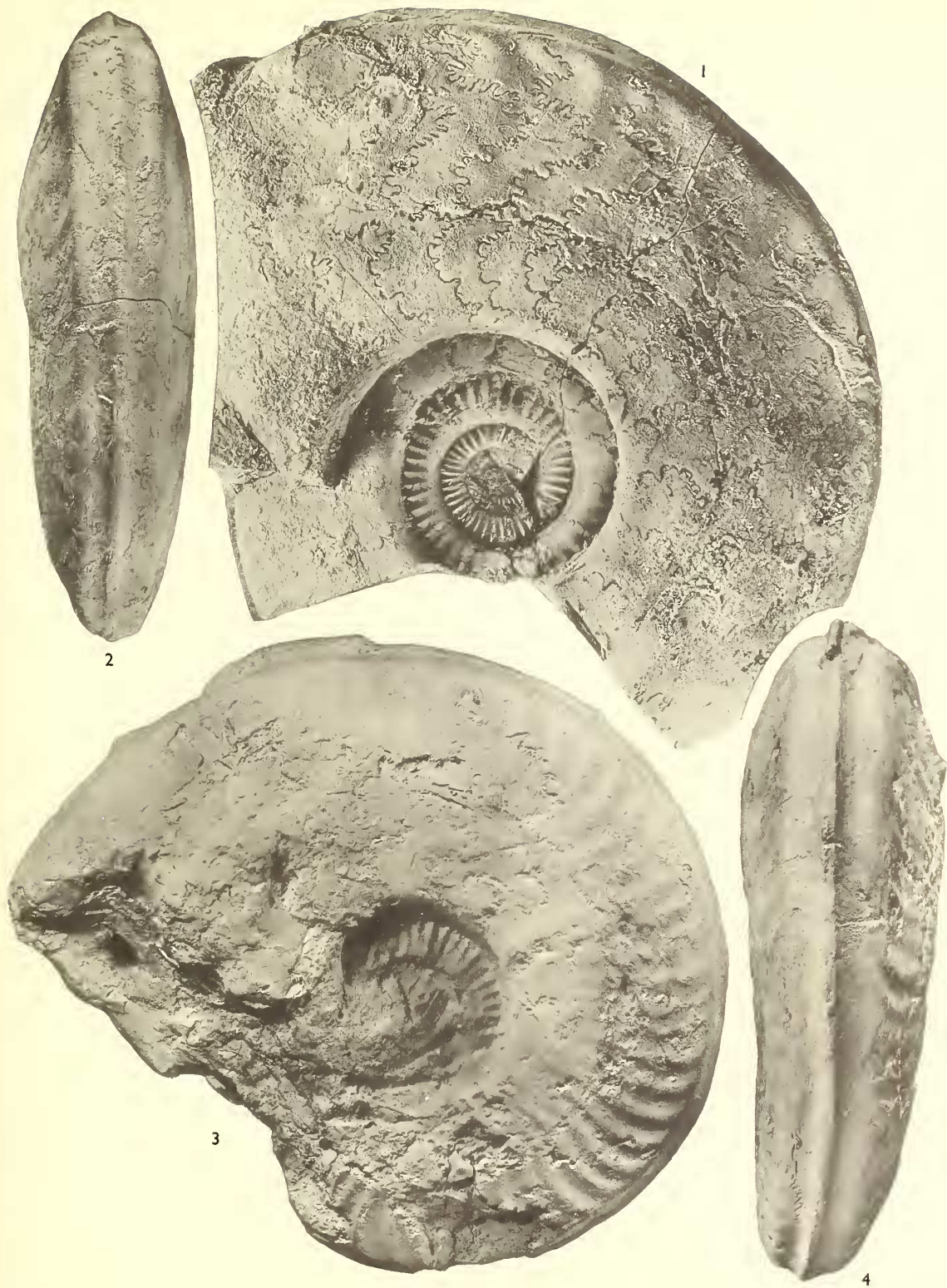
The example from Salas de los Infantes (no. 15230) forms part of the lowest Toarcian assemblage from that locality. The stratigraphical diagram supplied by B.I.P.M. shows that this assemblage was collected from a vertical thickness of about 20 metres of beds. Some of the ammonites are mere weathered fragments, clearly picked up loose, and the relative positions of the others are not recorded. They include two species of stratigraphical value: *Hildoceras sublevisioni* Fucini, which indicates the Mercati Zone of the sequence established by the writer in southern Switzerland and Italy (Donovan 1958), and *Dumortieria* aff. *levesquei* (D'Orbigny), indicating the Meneghinii Zone. There are no fossils certainly attributable to the intervening Erbaense Zone. The example of *Pseudolillia murvillensis* is likely to have come from the Mercati, Erbaense, or Meneghinii Zone but cannot be more precisely dated.

The example from el Cortijo (no. 15232) was collected from beds of *Ammonitico rosso* facies, overlying grey marls and limestones of 'Germanic' type, and below Middle Jurassic silts and shaly silts with chert layers. The associated fossils are *Hildoceras sublevisioni* Fucini and *Mercaticeras* cf. *umbilicatum* Buckman, both indicating the Mercati Zone, and *Erycites* sp. indet. which cannot be earlier than Erbaense Zone. No stratigraphical order is recorded for these fossils, and again the *Pseudolillia* cannot be exactly dated.

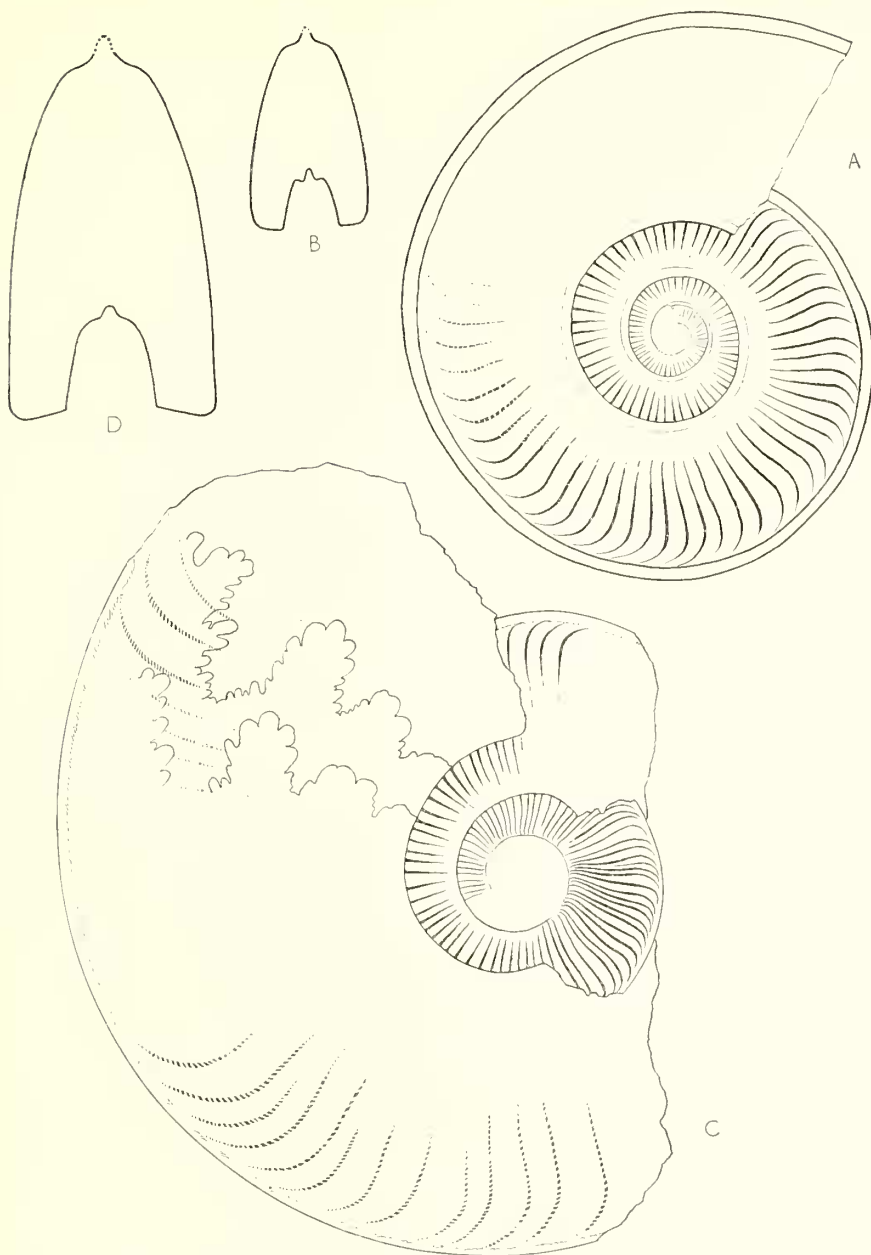
The fragment from Morocco found by M. du Dresnay was associated with examples of *Paroniceras*, above the horizon of *Hildoceras*. In southern Europe *Paroniceras* is

EXPLANATION OF PLATE 12

Figs. 1-4. *Pseudolillia murvillensis* Maubeuge. 1, 2, From the Toarcian of Salas de los Infantes, south-east of Burgos, Spain. University of Bristol Geology Museum no. 15230. Fig. 1 is natural size, fig. 2 is reduced $\times 0.77$. 3, 4, The holotype from the Toarcian of the Mine de Murville (Meurthe-et-Moselle), France, both figures reduced $\times 0.75$. From a plaster cast of the original, Bristol University Geology Museum no. 15396.



DONOVAN, *Pseudolillia*



TEXT-FIG. 2. A, B Restored diagrammatic side view and whorl section of a specimen of *Pseudolillia* aff. *murvillensis* Maubeuge from el Cortijo, north of Granada, Spain. University of Bristol Geology Museum, no. 15232, natural size. C, D. Side view and whorl section of an example of *Pseudolillia emiliana* (Reynès) from Salas de los Infantes, south-east of Burgos, Spain. University of Bristol Geology Museum no. 15231, natural size.

characteristic of the Bayani Subzone of the Erbaense Zone (Donovan 1958, p. 45), and the Moroccan *Pseudolillia* probably, therefore, belongs to this horizon.

Pseudolillia emiliana (Reynès)

Text-fig. 2c, d

1868 *Ammonites Emilianus* Reynès, p. 104, pl. 6, figs. 1a-c.

1874 *Ammonites Emilianus* (Reynès) Dumortier, p. 64.

1921 *Hildoceras Emilianum* Reynès, Monestier, p. 22, pl. 1, figs. 14, 15, ? fig. 16; pl. 4, fig. 23.

Type. Reynès's figures probably represent a specimen in the Muséum d'Histoire naturelle de Marseille, no. 6564, enlarged to twice natural size. The drawing is not exact and the umbilicus is shown too small, about 30 per cent. of the diameter instead of 34 per cent.

Remarks. The only worker to revise the species has been Monestier, who examined about twenty examples. The two that he illustrated have slightly larger umbilici than the supposed type, but are otherwise in good agreement. Reynès and Monestier figured the inner whorls only. A new specimen from Salas de los Infantes (no. 15231, text-fig. 2c, d) found by O. Renz, exemplifies the later development and shows that the umbilicus becomes smaller, and the ribbing fainter, with increasing size. At a diameter of about 11.5 cm. the umbilicus is only 24 per cent., and only the faint peripheral ends of the ribs can be seen. The body-chamber is missing; when complete the individual could not have been less than about 16 cm. in diameter.

Stratigraphical horizon. Reynès (1868, p. 104) recorded *Am. emilianus* from the Bifrons Zone, which he introduced for the middle part of the Toarcian stage, above the Serpentinum and below the Jurensis Zone. Monestier (1921, pp. 22, 23) declared that this was wrong, and that in the Aveyronnais the species was found exclusively in his 'Zone à *Polyplectus discoides* et *Hauumatoceras insigne*' which lies above the zone of *Pseudogrammoceras expeditum* (= *fallaciosum*) and below that of *Phlyseogrammoceras dispausum* (Monestier 1921, p. 5), and corresponds approximately to the Struckmanni Subzone of Dean, Donovan, and Howarth (1961, p. 487) and to part of the Bayani Subzone in the scheme proposed for the Italian succession by the present writer. The latter correlation is confirmed by the presence of *Paroniceras* in Monestier's Zone of *P. discoides* and *H. insigne* (Monestier 1921, pp. 8, 9; Donovan 1958, p. 45).

The Spanish example (no. 15231) was found at the same place as the specimen of *Pseudolillia murvillensis*, the horizon of which has already been discussed.

AGE AND AFFINITIES OF *PSEUDOLILLIA*

Stratigraphical position. Datable occurrences of *Pseudolillia* fall in the Thouarsense Zone, Struckmanni Subzone of the North-west European Province, and in the Erbaense Zone, Bayani Subzone, of the Mediterranean Province.

Geographical distribution. *Pseudolillia* is at present recorded from north-eastern France (Meurthe and Moselle Dept.), southern France, Spain, and eastern Morocco. The Aveyron district appears to be the only area where more than one or two specimens have been found, and even there the species is 'assez rare' (Monestier 1921, p. 22).